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NEWS 5 FEB 05 German (DE) application and patent publication number format
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FILE LAST UPDATED: 9 Jun 2004 (20040609/ED)

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=> s (poly (w) ethylene (w) glycol) or peg) (p) (fumar? or phthal?)
609062 POLY
479722 ETHYLENE
313319 GLYCOL
28740 PEG
37373 FUMAR?
165910 PHTHAL?

L1 531 ((POLY (W) ETHYLENE (W) GLYCOL) OR PEG) (P) (FUMAR? OR PHTHAL?)

=> s ll (p) ((cross (w) link?) or crosslink)
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436601 CROSS
390314 LINK?
13431 CROSSLINK
L2 15 L1 (P) ((CROSS (W) LINK?) OR CROSSLINK)

=> d l2 bib ab 1-15

L2 ANSWER 1 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:996543 CAPLUS
TI PEG and DBF modified porcine hemoglobin and their oxygen- carrying
capacity
AU Hong, Min; Cai, Jin; Meng, Wenfang; Li, Shiyun; Yuan, Zhongyi
CS Institute of Biochemistry and Cell Biology, Shanghai Institutes for
Biological Sciences, the Chinese Academy of Sciences, Shanghai, 200031,

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Peop. Rep. China
Shergru Huaxue Yu Shengwu Wuli Xuebao (2002), 34(4), 452-456
CODEN: SHWPAU; ISSN: 0542-5879
Shanghai Kexue Jishu Chubanshe
Journal
Chinese
LA

Modifications of proteins with polyethylene glycol(***PEG***) have been proven to enlarge mol. size of proteins, to prolong their retention time in the circulation as well as blunt immune or allergic reactions. Ho ***cross*** - ***linked*** with small mol. modifiers turns out to be more stable and to have better oxygen carrying capacity. In the present study, four derivs. of ***PEG*** with different activation groups, and several PEGs with different mol. wts. were covalently bound to porcine Hb(pHb). ***PEG*** -pHbs exhibited a variety of differences in their properties depending on the mol. wts. of the used PEGs, the ants. of bound PEGs and the presence or absence of allosteric cofactors. The optimal modification conditions for bis (3, 5- dibromosalicyl) ***fumarate*** (DBBF) as well as the phys. features and oxygen carrying capacity of DBBF-modified pHb were evaluated. Furthermore, both ***PEG*** and DBBF were used simultaneously to modify pHb. The results indicate that the pHbs modified with ***PEG*** and DBBF had more stable tetrameric conformations with a mol. wt. of 107 kD. Their oxygen half-satn. pressure(p50) is around 3. 33 kPa which approximates the physiol. p50 of human red blood cells.

L2 ANSWER 2 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:937367 CAPLUS
DN 140:117316

Thermally crosslinked oligo(polyethylene glycol fumarate) hydrogels in vitro support osteogenic differentiation of encapsulated marrow stromal cells in Temenoff, Johnna S.; Park, Hansoo; Jabbari, Esmail; Conway, Daniel E.; Sheffield, Tiffany L.; Ambrose, Catherine G.; Mikos, Antonios G. Department of Bioengineering, Rice University, Houston, TX, 77251, USA SO Biomacromolecules (2004), 5(1), 5-10
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English

AB A novel polymer, oligo(polyethylene glycol ***fumarate***) (OPF), crosslinked with a thermal radical initiation system has recently been developed in our lab. as an injectable, biodegradable cell carrier for regeneration of orthopedic tissues. The crosslinking, swelling, and degradative properties of hydrogels prep. from OPF with ***poly*** (***ethylene*** **glycol***) of two different chain lengths were assessed. The two OPF types had similar gelation onset times (.apprx.3.6 min) but, when ***cross*** - ***linked*** for 8 min at 37 .degree.C, exhibited significantly different swelling characteristics (fold swelling: 17.5 +- 0.2 vs 13.4 +- 0.4). Rat marrow stromal cells (MSCs) were then directly combined with the hydrogel precursors and encapsulated in a model OPF formulation at .apprx.14 million ce./ls/mL, cultured in vitro in the presence of osteogenic supplements (dexamethasone), and monitored over 28 days via histol. MSC differentiation in these samples (6 mm diam. .times. 0.5 mm thick before swelling), as detd. by Von Kossa staining for calcified matrix, was apparent by day 21. At day 28, mineralized matrix could be seen throughout the samples, many microns away from the cells. These expts. strongly support the usefulness of thermally crosslinked OPF

hydrogels as injectable cell carriers for bone regeneration.
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:906644 CAPLUS
DN 139:912327

TI In vitro cytotoxicity of redox radical initiators for crosslinking of oligo(poly(ethylene glycol) fumarate macromers
AU Temenoff, Johnna S.; Shin, Heungsoo; Conway, Daniel E.; Engel, Paul S.; Mikos, Antonios G.
CS Department of Bioengineering and Department of Chemistry, Rice University, Houston, TX, 77251, USA
SO Biomacromolecules (2003), 4(6), 1605-1613
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English

AB A novel hydrogel system based on oligo(***poly*** (***ethylene*** **glycol***) ***fumarate***) (OPF) is currently being investigated as an injectable carrier for marrow stromal cells (MSCs) for orthopedic tissue engineering applications. This hydrogel is ***cross*** - ***linked*** using the redox radical initiators ammonium persulfate (APS) and ascorbic acid (AA). In this study, two different persulfate oxidizing agents (APS and sodium persulfate (NAPS)) with three reducing agents derived from ascorbic acid (AA, sodium ascorbate (Asc), and magnesium ascorbate-2-phosphate (Asc-2)) and their combinations were examd. to det. the relationship between pH, exposure time, and cytotoxicity for rat MSCs. In addn., gelation times for specific combinations were detd. using rheometry. pH and cell viability data after 2 h for combinations ranging from 10 to 500 mM in each reagent showed that there was a smaller pH change and a corresponding higher viability at lower concns., regardless of the reagents used. At 10 mM, there was less than a 1.5 unit drop in pH and greater than 90% viability for all initiator combinations examd. However, MSC viability was significantly reduced with concns. of 100 mM and higher of the initiator combinations. At 100 mM, exposure to NAPS/Asc-2 resulted in significantly more live cells than exposure to APS/AA or NAPS/Asc, but at this concn., NAPS/Asc-2 exhibited significantly longer OPF gelation onset times than APS/AA. At all combination concns., exposure time (10 min vs 2 h) did not significantly affect MSC viability. These data indicate that final pH and/or radical formation have a large impact on MSC viability and that multiple, intertwined testing procedures are required for identification of appropriate initiators for cell encapsulation applications.

RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 4 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:633030 CAPLUS
DN 139:185742

TI Synthesis and characterization of biodegradable cationic poly(propylene fumarate-co-ethylene glycol) copolymer hydrogels modified with agmatine for enhanced cell adhesion
IN Mikos, Antonios G.; Tanahashi, Kazuhiro
PA William Marsh Rice University, USA
SO U.S. Pat. Appl. Publ., 17 pp.
CODEN: USXXAO

DT Patent
LA English
FAN.QNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003152549	A1	20030814	US 2002-300202	20021120
PRA1 US 2001-331668P	P	20011120		
US 2002-375270P	P	20020424		

AB A ***cross*** - ***linkable*** monomer comprises a ***fumaric*** acid functional group having a first end and a second end, a first spacer group affixed to said first end and comprising at least repeating unit, a first terminal group affixed to said first spacer group, a second spacer group affixed to said second end and comprising at least one ethylene glycol repeating unit, and a second terminal group affixed to said second spacer group. A hydrogel formed by crosslinking the present monomer and a method for making the monomer are also described. A method for forming a hydrogel comprises the steps of (a) synthesizing a copolymer of poly(propylene fumarate) (PPF) and ***poly*** (***ethylene***, ***glycol***, (b) synthesizing a ***PEG*** -tethered ***fumarate*** (PEGF), (c) coupling agmatine sulfate to the PEGF to produce PEGF modified with agmatine (Agm-PEGF), and (d) crosslinking the P(PPF-co-EG) from step (a) with Agm-PEGF from step (c).

L2 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:151047 CAPLUS
DN 138:326492
TI In vitro cytotoxicity of unsatd. oligo[poly(ethylene glycol) fumarate] macromers and their crosslinked hydrogels
AU Shin, Heungsoo; Tenenoff, Johna S.; Mikos, Antonios G.
CS Department of Bioengineering, Rice University, Houston, TX, 77251-1892, USA
SO Biomacromolecules (2003), 4(3), 552-560
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English
AB Currently, oligo(***poly*** (***ethylene***, ***glycol***)) (PPF) hydrogels are being investigated as an injectable and biodegradable system for tissue engineering applications. In this study, cytotoxicity of each component of the OPF hydrogel formulation and the resulting ***cross*** - ***linked*** network was examined. Specifically, OPF synthesized with ***poly*** (***ethylene***, ***glycol***, (b) synthesizing a ***PEG*** -tethered ***fumarate*** (PEGF), (c) coupling agmatine sulfate to the PEGF to produce PEGF modified with agmatine (Agm-PEGF), and (d) crosslinking the P(PPF-co-EG) from step (a) with Agm-PEGF from step (c).

linked, the leachable products from the OPF hydrogels had minimal adverse effects on the viability of MSCs (percentage of live cells was higher than 90% regardless of hydrogel types). The results suggest that, after optimization of crosslinking parameters, OPF-based hydrogels hold promise as novel injectable scaffolds or cell carriers in tissue engineering.

RE.QNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:739851 CAPLUS
DN 138:56325
TI Preparation of biodegradable poly[(dimethylchlorosilane)-(fumaric acid/sebacic acid)]-PEG block copolymer
AU Najafi, Farhood; Sarbolouki, Mohammad N.
CS Faculty of Science, Department of Chemistry, Tehran University, Tehran, 14155-6455, Iran
SO Polymer (2002), 43(23), 6363-6368
CODEN: POLMAG; ISSN: 0032-3861
PB Elsevier Science Ltd.
DT Journal
LA English
AB A low mol. wt. linear unsatd. precursor, poly[(dimethylchlorosilane)-(***fumaric*** acid/sebacic acid)], PDS with active dimethylchlorosilyl terminal groups, was synthesized by polycondensation of ***fumaric*** acid and sebacic acid with the aid of dimethylchlorosilane as coupling agent. PDS was used to prep. poly[(dimethylchlorosilane)-(***fumaric*** acid/sebacic acid)]-***PEG***, P(DFS-co-EG) block copolymer. Each of the compts., PDS or P(DFS-co-EG), was ***cross*** - ***linked*** with a vinyl monomer like Me methacrylate or styrene. Products thus obtained were studied in terms of mol. wt., compn., structure, and thermal properties. Hydrolytic degradn. of P(DFS-co-EG) block copolymer in ag. media (pH 7.3, 37.degree.) in a 28-day period is also studied.

RE.QNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 7 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:301238 CAPLUS
DN 137:33970
TI Characterization of the Cross-Linked Structure of Fumarate-Based Degradable Polymer Networks
AU Timmer, Mark D.; Jo, Seongsong; Wang, Chuanycue; Ambrose, Catherine G.; Mikos, Antonios G.
CS Department of Bioengineering, Rice University, Houston, TX, 77251-1892, USA
SO Macromolecules (2002), 35(11), 4373-4379
CODEN: MAMOBX; ISSN: 0024-9297
PB American Chemical Society
DT Journal
LA English
AB A new method was developed to examine networks formed with linear macromers of ***fumaric*** acid and diacrylate crosslinking agents in order to analyze their ***cross*** - ***linked*** structure. This method involved the accelerated degradn. of the networks and the anal. of the degradn. products. Two model networks of poly(propylene fumarate) (PPF) ***cross*** - ***linked*** with

poly(propylene ***fumarate***)-diacrylate (PPF-DA) and oligo((OPF) ***cross*** - ***ethylene***) ***glycol***) ***fumarate***) ***ethylene*** ***glycol*** with ***poly*** (***ethylene*** ***glycol***)-diacrylate (***PEG*** -DA) were evaluated with this method to det. the macromer and crosslinking agent conversions, the network crosslinking d., and an est. of the mol. wt. between ***cross*** - ***links***. The validity of the method was confirmed by the anal. of the compn. of the un- ***cross*** - ***linked*** macromers and the correlation of the mech. properties of the ***cross*** - ***linked*** polymers with the macromer/crosslinking agent double bond ratio. The results showed that acrylate species had participated more than ***fumarates*** in network formation. Furthermore, the structure of PPF/PPF-DA networks was influenced by the amt. of crosslinking agent in the polymer formulation, and the OPF/ ***PEG*** -DA network structure was controlled by the no. of repeating ***fumarate*** units in the macromer. This method provides a new means to characterize the macromol. structure of ***fumarate*** -based networks.

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 8 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:172392 CAPLUS
DN 136:236890
TI Biocompatible macromers comprising alternating fumaric acid and poly(ethylene glycol) units
IN Jo, Seongborg; Mikos, Antonios G.
PA USA
SO U.S. Pat. Appl. Publ., 25 pp., Cont.-in-part of U.S. 6,306,821.
DT Patent
LA English
FAM.CNT 5

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002028189	A1	20020307	US 2001-845570	20010430
US 6306821	B1	20011023	US 2000-549483	20000414
CA 2345787	AA	20011111	CA 2001-2345787	20010501
WO 2001085180	A1	20011115	WO 2001-US14910	20010509

W: JP, KR
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR
EP 1282428 A1 20030212 EP 2001-935182 20010509
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR
US 2002177668 A1 20021128 US 2002-127117 20020422
FRA1 US 2002-549483 A2 20000414
US 2000-203689P P 20000511
US 2000-236099P P 20000928
US 1999-129577P P 19990416
US 1999-146991P P 19990803
US 1999-167328P P 19991124
US 1999-167388P P 19991124
US 2000-549485 A3 20000414
US 2001-845570 A 20010430
WO 2001-US:4910 W 20010509
AB A new oligomer based on alternating ***fumaric*** acid and

poly (***ethylene*** ***glycol***) (***PEG***) units provided. The oligo(***PEG*** ***fumarate***) (OPF) may be functionalized by modification with a biocompatible org. group. Further, the OPF may be ***cross*** - ***linked*** using radical polymn. in the presence of either a chem. or photo initiator. A ***cross*** - ***linked*** OPF gel has a swelling behavior that is tunable dependent on the mol. wt. of ***PEG***. A ***cross*** - ***linkable*** ***PEG*** macromer, as exemplified by oligo(***PEG*** ***fumarate***), has unsatd. double bonds, for example in the ***fumarate*** groups, along its macromol. chain that allows for the prepn. of hydrogels with tailored structure and properties. An OPF was prepd. by a reaction between ***PEG*** and ***fumarate*** chloride. The prepd. OPF was crosslinked by radical polymn. initiated by photorrad. and chem. initiation. The crosslinked OPF gels exhibited typical properties of hydrogels, which were dependent on the mol. wt. of ***PEG*** and the reactant ratio between ***fumarate*** chloride and ***PEG***.

L2 ANSWER 9 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:36321 CAPLUS
DN 134:252975
TI Modification of Oligo(poly(ethylene glycol) fumarate) Macromer with a GRGD Peptide for the Preparation of Functionalized Polymer Networks
AU Jo, Seongborg; Shin, Heungsoo; Mikos, Antonios G.
CS Department of Bioengineering, Rice University, Houston, TX, 77251-1892, USA
SO Biomacromolecules (2001), 2(1), 255-261
CODEN: BOMAF6; ISSN: 1525-7797
PB American Chemical Society
DT Journal
LA English
AB A novel macromer, oligo(***poly*** (***ethylene*** ***glycol***) ***fumarate***) (OPF), was synthesized by the reaction between wt. 1000 (***PEG*** 1.0K) and ***fumarate*** chloride. The oligo(***PEG*** ***fumarate***) (OPF 1.0K) was modified with a peptide known to modulate cellular functions, Gly-Arg-Gly-Asp (GRGD), after being activated with 4-nitrophenyl chloroformate (NPCl). The detd. yield of the GRGD modification in 0.1 M sodium bicarbonate buffer of pH 8.3 was 63% as detd. by NMR measurements. The OPF 1.0K and the OPF 1.0K modified with GRGD were ***cross*** - ***linked*** with an unsatd. biodegradable polyester, poly(propylene ***fumarate***) (PPF), by photopolymn. The IR (FT-IR) spectroscopy and contact angle measurements. The equil. contact angle of water on the ***cross*** - ***linked*** PPF surface decreased with the incorporation of OPF 1.0K and the OPF 1.0K modified with GRGD. The results suggest that the OPF macromer can be used for the prepn. of functionalized networks incorporating cell adhesion specific sequences.

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:867224 CAPLUS
DN 135:157551
TI Studies on poly(propylene fumarate-co-ethylene glycol) based bone cement

AU Jayabalan, Muthu; Thomas, Vinoy; Sreelatha, P. K.
 CS Polymer Division, Biomedical Technology Wing, Sree Chitra Tirunal
 Institute for Medical Sciences and Technology, Thiruvananthapuram, 12,
 India
 SO Bio-Medical Materials and Engineering (2000), 10(2), 57-71
 CODEN: BMENEO; ISSN: 0959-2989
 PB IOS Press
 DT Journal
 LA English
 AS Poly(propylene glycol) -co-ethylene glycol random (PPF-1) and
 block (PPF-2) copolymer oligomers were prepd. Comparing the setting
 characteristics of PPF-1 and PPF-2 with comonomer n-vinyl pyrrolidone
 (n-VP) and swelling characteristics of cured PPF-1 and PPF-2, lower
 setting temp. and setting time was obsd. with the former leading to higher
 swelling coeff. and lower *****cross***** *****link***** d. in the cured
 PPF-1. Due to the high swelling coeff. and low setting exothermic temp.
 assocd. with PPF-1, the bone cement was prepd. from PPF-1, n-VP and
 hydroxyapatite (HAP). The in vitro degradn. studies reveal lesser wt. loss
 and deformation of PPF-1/n-VP/HAP based cured resin in Ringer's soln. and
 phosphate buffered saline in comparison with that of PPF-1/n-VP cured
 resin. Though the bone cement composite has adequate mech. properties
 with HAP, the compressive strength and modulus of the composite aged in
 Ringer's soln. and PBS reduced appreciably which is due to extensive
 hydration and plasticization by the *****PEG***** unit. However, the
 bone-binding and bond strength of the bone cement detd. as the load for
 sepn. of bones was found to be similar to that of fast setting calcium
 phosphate - atelocollagen (5%) bone cement. The bone cement
 PPF-1/n-VP/HAP could be used as scaffold for correcting the bone defects.
 PPF-1/n-VP/HAP could be used as scaffold for correcting the bone defects.
 RE. CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
 AN 1999:538715 CAPLUS
 DN 132:167121
 TI Preparation and characterization of poly(propylene glycol)-co-ethylene
 glycol hydrogels
 AU Suggs, Laura J.; Xao, Edmund Y.; Palombo, Laurie L.; Krishnan, Ravi S.;
 Widmer, Markus S.; Mikos, Antonios G.
 CS Cox Laboratory for Biomedical Engineering, Institute of Biosciences and,
 Rice University, Houston, TX, 77251-1892, USA
 SO Polymers for Tissue Engineering (1998), 99-112. Editor(s): Shoichet,
 Molly S.; Hubbell, Jeffrey A. Publisher: VSP, Utrecht, Neth.
 CODEN: 66AEAB
 DT Conference
 LA English
 AB The prepn. and bulk characterization of a *****cross***** - *****linked*****
 poly(propylene glycol)-co-ethylene glycol hydrogel are
 described. Eight block copolymer formulations were made by varying four
 different design parameters including *****poly***** (*****ethylene*****
*****glycol*****) (*****PEG*****) mol. wt., poly(propylene glycol)-co-ethylene glycol
 (PPF) mol. wt., copolymer mol. wt., and *****PEG***** /PPF ratio. Two
 different crosslinking formulations were also tested, one with a
 crosslinking monomer and one without. The extent of the crosslinking
 reaction and degree of swelling in aq. soln. were detd. for copolymer
 formulations made without a crosslinking monomer. The values of mol. wt.
 between *****cross***** *****links***** ranged from 300 *****.***** 120 to 1190
*****.***** 320 as detd. from swelling data (n = 3). The equil. vol. swelling

ratios varied from 1.5 *****.***** 0.1 to 3.0 *****.***** 0.1. This ratio increased
 with increasing *****PEG***** content in the copolymer and decreased with
 increasing PPF mol. wt. The complex dynamic elastic modulus ranged from
 0.9 *****.***** 0.2 to 13.1 *****.***** 1.1 MPa for the formulations with the
 crosslinking monomer, N-vinyl pyrrolidone (n = 3). The ultimate tensile
 stresses of the formulations made with the crosslinking agent ranged from
 0.15 *****.***** 0.03 to 1.44 *****.***** 1.06 MPa, and tensile modulus ranged from 1.11
*****.***** 0.20 to 20.66 *****.***** 2.42 MPa (n = 5). All of the mech. properties
 increased with increasing PPF mol. wt. and decreased with increasing
*****PEG***** content in the copolymer. The phys. properties of the
 hydrogels can be tailored for specific applications by altering their
 compn.

RE. CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 12 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
 AN 1997:429635 CAPLUS
 DN 127:95688
 TI Synthesis and Characterization of a Block Copolymer Consisting of
 Poly(propylene fumarate) and Poly(ethylene glycol)
 AU Suggs, Laura J.; Payne, Richard G.; Yaszemski, Michael J.; Alemany,
 Lawrence B.; Mikos, Antonios G.
 CS Cox Laboratory for Biomedical Engineering Institute of Biosciences and
 Bioengineering, Rice University, Houston, TX, 77251-1892, USA
 SO Macromolecules (1997), 30(15), 4318-4323
 CODEN: MAMOBX; ISSN: 0024-9297
 PB American Chemical Society
 DT Journal
 LA English
 AB Poly(propylene glycol)-co-ethylene glycol has been synthesized
 in an effort to develop a *****cross***** - *****linked***** biomaterial
 for use as a vascular implant. This copolymer has been fabricated in a
 block configuration with two to three homopolymer units in series through
 a transesterification reaction between the linear polyester and the
 terminal hydroxyl functionalities of the *****poly***** (*****ethylene*****
*****glycol*****) (*****PEG*****). A no. of design parameters including
 the mol. wts. of the two homopolymers, the copolymer reaction time, and the
 wt. percent of *****PEG***** were varied in order to assess their effect
 on the properties of the resulting copolymer. This material has been
 characterized in terms of structure and compn. as well as thermal
 properties and soly. behavior. All formulations of the copolymer
 exhibited a single glass transition temp. and a single melting temp., with
 a degree of crystallinity which was dependent upon the relative amt. of
*****PEG***** . The copolymers were water sol. and demonstrated enhanced
 solubilities in org. solvents compared to the parent homopolymers.

L2 ANSWER 13 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
 AN 1995:925401 CAPLUS
 TI Crystallographic studies on crosslinked hemoglobins
 AU Fernandez, E. J.; Zhao, L.; Brunzelle, J.; Olsen, K. W.
 CS Dept. Chemistry, Loyola Univ., Chicago, IL, 60626, USA
 SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24
 (1995), Issue Pt. 2, PHYS-203 Publisher: American Chemical Society,
 Washington, D. C.
 CODEN: 61XGAC
 DT Conference; Meeting Abstract

- LA English
- AB X-ray diffraction data were collected on two chem. crosslinked Hbs. The first was crosslinked between the two Lys-.alpha.99 (.alpha.99XlHbA) with bis(3,5-dibromosalicyl) **fumarate** (DBSF). Crystals were grown under high salt, deoxy conditions. The structure was solved by difference Fourier methods and refined to an R-factor of 17.8%. There were no major displacements from native deoxy HbA. The only residues affected, besides the Lys-.alpha.99s, were the two Glu-.beta.101s and Arg-.beta.104s. Like the Lys-.alpha.99, these residues into the central cavity. The second **crosslink** was put between the Lys-.beta.82 (.beta.82XlHbA) using DBSF. Crosslinking was done under oxy conditions. Crystals were grown under deoxy conditions from **PEG** -6000 (P21, a=65.3, b=96.0, c=101.5 and .beta.=101.5.degree., 2 tetramers per asym. unit). The structure was solved by mol. replacement using X-PLOR. The R-factor was 17.2%. While the structure remained largely similar to deoxy HbA, there were portions that had moved towards the liganded oxy HbA. There were also parts of .beta.82XlHbA that were unlike both the deoxy and the oxy HbA structures and these were explained to be a consequence of the **cross** - **link** between the .beta.-chains.
- L2 ANSWER 14 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
- AN 1995:554141 CAPLUS
- DN 123:65631
- TI Effects of polymerization on the oxygen carrying and redox properties of diaspirin cross-linked hemoglobin
- AU Rogers, Melanie S.; Brockner Ryan, Beth; Cashion, Robert E.; Alayash, Abdul I.
- CS Center for Biologics Evaluation and Research, Food and Drug Administration, 8800 Rockville Pike, Bethesda, MD, 20892, USA
- SO Biochimica et Biophysica Acta (1995), 1248(2), 135-42
- PB Elsevier
- DT Journal
- LA English
- AB Human Hb site specifically **cross** - **linked** with bis(3,5-dibromosalicyl) **fumarate** results in a low oxygen affinity Hb-based red cell substitute (.alpha.-DBSF). Polymn. of .alpha.-DBSF by bis(maleoyglycidamide) polyethylene glycol (BMAA- **PEG**) yields poly .alpha.-DBSF which offers the added benefits of reduced renal clearance and increased retention in the vascular circulation. Oxygen equil. curves for poly .alpha.-DBSF are slightly left-shifted (higher O2 affinity) compared to those of .alpha.-DBSF; with a diminished cooperativity and a reduced Bohr effect. In rapid mixing expts. (oxygen disson. and carbon monoxide binding), poly .alpha.-DBSF exhibits a several fold increase in the overall rate of deoxygenation and carbon monoxide binding kinetics over its **cross** - **linked** counterpart. The rate of nitric oxide binding to the oxidized form of poly .alpha.-DBSF shows little or no change compared to the intramolecularly **cross** - **linked** deriv. The redn. of cyanomet poly .alpha.-DBSF by dithionite is several fold faster than that of HbA0 and .alpha.-DBSF whereas the slow subsequent cyanide disson. from the ferrous iron remained unchanged among all proteins. The propensity of poly .alpha.-DBSF for auto-oxidn. is slightly enhanced over .alpha.-DBSF whereas the extent of oxidative modification by hydrogen peroxide is very similar. Polymn. appears to selectively modify ligand interactions and redox kinetics of the tetrameric **cross** - **linked** form which reflects a possibly more open heme pocket. The data suggests that
- changes in oxygenation properties of Hb brought about by a given modification are not necessarily predictive of other functional changes.
- L2 ANSWER 15 OF 15 CAPLUS COPYRIGHT 2004 ACS on STN
- AN 1961:78982 CAPLUS
- DN 55:78982
- OREF 55:149621,14963a-h
- TI Laminated plastics on a fiber glass base. Effect of monomer content on the properties of unsaturated polyester resins and glass plastics with polyester binders
- AU Li, P. Z.; Mikhailova, Z. V.; Sedov, L. N.
- SO Plasticheskie Massy (1960), (No. 5), 7-16
- CODEN: PLMSAI; ISSN: 0554-2901
- DT Journal
- LA Unavailable
- AB cf. A4 55, 12861h. The effect of the concn. of solns. of unsatd. polyester resins in styrene on the properties of these solns. in their original and cured states and on their curing rates in the presence of peroxide initiators and Co naphthenate was studied. The mechanism of curing polyester-styrene resins, the optimum styrene content in the solns. for best phys.-chem. and mech. properties of cured resins, and the relation of mech. and elec. insulating properties of glass textolite to polyester binder concn. were investigated. Polyesters were gelatinized at 20.degree. in the presence of 3% isopropylbenzene hydroperoxide and 8% accelerator for poly(diethylene glycol maleate **phthalate**) (I) and poly(diethylene glycol maleate diphenolate) (II), % hydroperoxide and 8% accelerator for poly(diethylene glycol maleate) (III) **poly** (**ethylene** **glycol** maleate **phthalate**) (IV), **poly** (**ethylene** **glycol** maleate adipate) (V), poly(diethylene glycol maleate adipate) (VI), 3% of a soln. of 50% MeOOEt peroxide and 3% accelerator for poly(pentaerythritol dichlorohydrin maleate **phthalate**) (VII) and poly(pentaerythritol dichlorohydrin maleate adipate) (VIII). Analyses of polyesters were as follows (product; acid no.; d.): I 42.6, 1.33; II 44.6, 1.39; III 21.1, 1.29; (IV) 32.3, 1.34; V 32.0, 1.30; VI 26.8, 1.32; VII 37.0, 1.66; VIII 42.5, 1.61. Cured resins and fiber glass were aged for 1 month before the expts. The relation of sp. gr. of solns. of unsatd. polyester resins in styrene to temp. can be expressed by dt2 = dt1 - 0.00076 (t2 - t1), where dt1 is the d. at temp. t1 and dt2 is the d. at temp. t2. The relation of viscosity of these solns. to temp. is given by .eta. = a/tb, where .eta. is the coeff. of viscosity in cp., t is temp. degree.C., and a and b are consts. The basic process involved in curing was copolymerization of the polyester with styrene. The rate of gelatinization with styrene content >42% depended mainly on the rate of formation of **cross** - **link** ties which increased with an increase in the amt. of styrene. The d. of cured solns. was a linear function of the monomer content of the soln. Shrinkage of styrene solns. of polyester resins on curing was proportional to styrene content only in the intervals 15-20 and 45-50%. The optimum styrene content in solns. to obtain greatest heat resistance was 1 mol. monomer for 1 ethylene bond of polyester for esters without **phthalic** or adipic acids, a 10-20% excess of this amt. for those contg. **phthalate** groups, double the calcd. amt. for the diphenolate, and 2.4 times the calcd. amt. for dichlorohydrin pentaerythritol esters. The relation of hardness to original soln. concn. corresponded to the relation with heat resistance, and depended both on the no. of **cross** - **links** and on the presence of aromatic

and other components in the copolymer. Extn. of cured products with acetone in a Soxhlet app. for 12 hrs. showed that the min. amt. was extd. at the same styrene content as max. heat resistance. A study of I at various concns. showed that hygroscopicity decreased with an increase in styrene content in the original compn. Compression strength and the modulus of elasticity of cured solns. of I and VII increased with an increase in the styrene content. Glass textolite based on styrene solns. of I and glass cloth showed the following elec. characteristics (property: value at 16%, 25%, and 38% styrene content): dielec. const. at 50 cycles/sec., 4.9, 4.4, -; dielec. const. at 106 cycles/sec., 5.2, 4.8, 4.6; power factor at 50 cycles/sec., 0.021, 0.015, 0.014; power factor at 106 cycles/sec., 0.021, 0.015, 0.014; surface resistivity (ohms), 5.3 times. 10¹⁴, 5.3 times. 10¹⁴, 5.3 times. 10¹⁴; dielec. strength parallel (kv./mm.), 13.7, 14.1, 17.9. The textolite showed max. tensile strength by bending and compression; modulus of elasticity, and heat resistance at a 38% styrene content. Thoroughness of impregnation of fiber glass fillers influenced mech. and optical properties, the H₂O-resistance, and chem. stability; the greater the monomer content, the lower the viscosity, and the more complete the impregnation.

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L3	3195	1 with (crosslink\$ or cross link\$)	USPAT	ADJ	ON	2004/06/10 16:14
L4	483	((poly ethylene glycol) or peg) with (fumar\$ or phthal\$)	USPAT	ADJ	ON	2004/06/10 16:15
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